Optimization of Aqueous Two-Phase System (ATPS) of Recombinant Bromelain by Response Surface Methodology

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Abstract:
Recombinant bromelain is a protease that was partially purified using aqueous two-phase system (ATPS). The process variables (pH, PEG 6000 and potassium phosphate concentration) were optimized on enzyme activity and partition coefficient using response surface methodology (RSM) based on a face-centered central composite design (FCCCD) model. The optimum conditions for purification were at 18.47% [w/w] PEG6000 and 13% [w/w] potassium phosphate, pH 7.0 with enzyme activity was obtained as 0.272±0.0036 unit m/L, and partition coefficient as 1.394±0.093. The recombinant bromelain was preferentially partitioned into the top phase and the band was reduced in contrast to crude sample on SDS-PAGE gel.

Keywords Aqueous Two-Phase System (ATPS); Face-Centered Central Composite Design (FCCCD); Optimization; Response Surface Methodology (RSM); Recombinant Bromelain

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